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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
	)	
	)	
Forward-Looking Mechanism For High Cost Support For Non-Rural LECs	)	CC Docket No. 97-160 (DA-98-1587)

JOINT COMMENTS OF BELLSOUTH TELECOMMUNICATIONS, INC., U S WEST, INC., AND SPRINT CORPORATION TO COMMON CARRIER BUREAU REQUEST FOR COMMENT ON MODEL PLATFORM DEVELOPMENT

BELLSOUTH TELECOMMUNICATIONS, INC.

M. Robert Sutherland
Richard M. Sbaratta
Suite 1700
1155 Peachtree Street, N. E.
Atlanta, GA 30309-3610
(404) 249-3390

Their Attorneys

U S. WEST, INC.

Robert B. McKenna
Suite 700
1020 19th Street, N. W.
Washington, DC 20036
(303) 672-2798

Of Counsel, Dan L. Poole

SPRINT CORPORATION

Jay C. Keithley
Sandra K. Williams
1850 M Street
Suite 1110
Washington, D. C. 20036
(202) 828-7453

Attorneys for Sprint Local Telephone Companies

August 28, 1998

Before the
Federal Communications Commission
Washington, D.C. 20554

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BellSouth Telecommunications, Inc., Sprint Corporation and US West, Inc. (hereinafter "Joint Sponsors"), joint sponsors of the Benchmark Cost Proxy Model ("BCPM"), hereby submit the following comments in response to the Public Notice released on August 7, 1998.[1]

The Public Notice affords parties an opportunity to update their comments regarding the forward-looking economic cost model platforms that have already been filed with the Commission. The Joint Sponsors welcome the opportunity to provide the Commission with their response to issues relating to the cost model platforms set forth in the Public Notice.

To facilitate the Commission's review, the Joint Sponsors provide Attachment A which provide their comments relating to the issues as outlined in the Public Notice seeking comment about the utilization of customer location data, methods of grouping customers, the design of distribution and feeder plant, and reaction to the current synthesized version of the HCPM.

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1 "Common Carrier Bureau Seeks Comment on Model Platform Development," Public Notice, DA 98-1587, released August 7, 1998 (hereinafter "Public Notice").

Respectfully submitted,

BELLSOUTH TELECOMMUNICATIONS, INC.

By: ______________________
M. Robert Sutherland
Richard M. Sbaratta

Suite 1700
1155 Peachtree Street, N. E.
Atlanta, GA 30309-3610
(404) 249-3390

Their Attorneys

U S. WEST, INC.

By: ______________________
Robert B. McKenna

Suite 700
1020 19th Street, N. W.
Washington, DC 20036
(303) 672-2798

Of Counsel, Dan L. Poole

SPRINT CORPORATION

By: ______________________
Jay C. Keithley
Sandra K. Williams

1850 M Street
Suite 1110
Washington, D. C. 20036
(202) 828-7453

Attorneys for Sprint Corporation

August 28, 1998

Attachment A

The Public Notice crafted its questions and search for comment under headings that dealt with utilization of customer location data, methods of grouping customers, the design of distribution and feeder plant, and reaction to the current synthesized version of the HCPM. The comments are organized in the same manner.

Synthesis Concept

The Joint Sponsors are not at all opposed to the concept of synthesizing a cost proxy model platform utilizing different elements from various models. The concept is workable. In fact, to the extent that the better (or best) practice for the different modules is utilized in the synthesized product, that product should be superior to any of its component-producing progenitors. The Joint Sponsors do have a number of concerns, however, about the process. First, it will be difficult to produce a finished product in the desired timeframe. That is not said to dissuade the Commission from attempting the synthesis effort, but said in an effort to manage expectations and more importantly, in an effort to encourage that accuracy and efficacy not be sacrificed on the altar of expediency. It has taken months and months for the BCPM and HAI to come to where they are today. Admittedly, HCPM and its synthesized byproducts can learn from that process, but it will need to undergo a great deal of public scrutiny before it can be proffered as a finished product. The Joint Sponsors are concerned about any further delay in the implementation of federal high cost fund. In this regard, the Joint Sponsors are ready to assist and will continue to assist the FCC staff in meeting the July 1, 1998 implementation date.

One method to increase the ability to test the HCPM would be to create a linkage between modules of the HCPM and BCPM or between HCPM and HAI. It is possible to "weld" modules from one model to another. By "welding" we mean incorporating the HCPM modules for customer location, clustering, and loop cost generation into the HAI or BCPM models so that the user may edit inputs, process the HCPM, and develop an expanded array of reports with which to analyze its process. The use of "welding" techniques can provide valuable information at this time. Such a welding process is currently underway for the existing models with the HCPM.

Utilization of Customer Location Data

Geocode Data

Customer location data is key to the accuracy of any proxy model[1]. As has been stated in the past, the BCPM Joint Sponsors believe good geocoded data would be beneficial to any proxy model. However, the Joint Sponsors have repeatedly questioned the quality of the currently available geocoded data. Our concerns stem from at least three items. First, currently available geocoded points do not account for unpopulated households. To meet the minimum service requirements of most states, unpopulated households must also have public network connections nearby. Otherwise, it would be impossible for carriers of last resort to meet the requirement to provide service within a certain number of days of the request. Second, geocoding success rates are poorest in rural, high cost areas – exactly those areas where universal service subsidy requirements are the greatest. Third, we need to be assured that the source of the geocoding points and the geocoding process are of high quality. That is not always a certainty today.

In addition to a concern about the use of geocoding as it is possible today, the Joint Sponsors are more concerned about accurately locating those customers that are not geocoded. Since we know that the geocoding will not account for all customers, surrogate points will have to be determined for those households that are not geocoded. The proper determination of surrogate points is vital to the accuracy of the models. To compound this concern, not only is the method of creating surrogate points important, so is the method of mixing successfully geocoded points and surrogate points. If that mixing is done improperly it is likely there will be a biased estimate of the actual plant requirements.

Surrogate Methods

As noted in the Public Notice, there have been many options proposed to determine the surrogate location of those households which cannot be geocoded. The BCPM Joint Sponsors have proposed the use of the road network as a leading indicator for locating the households. It is our belief that not only do people live along the roads, but also telephone plant will, to a great extent, follow roads. This is typically where rights-of-way are located. Therefore, in a model trying to replicate the amount of plant, road data is a useful piece of information. We would add that the placement of the surrogate points should be based upon an assignment of the points to the roads. This would produce an unbiased estimate of the household location in the chosen unit of geography.

To address the possible bias of combining geocoded and surrogate customer location points, one possible method is to use a "breakpoint" below which geocoded data points would not be used. That is, if the success rate of geocoded data was not above a certain point, geocoded data should not be used. In speaking with a number of geographical information system (GIS) experts, it is their opinion that this breakpoint needs to be set relatively high (80%-85%) at the census block level. Unfortunately, there is a dearth of empirical evidence to support that level for a breakpoint. Therefore, we will provide a theoretical argument.

There are many possible approaches to the surrogate location process. The Public Notice discusses a uniform distribution on the perimeter (used by HAI), a distribution on the road network (used by BCPM), or a random distribution. Regardless of which approach is taken, when the need for surrogate customer location points arises, the developer must deal with bias. *How can I create surrogate locations that most fairly represent where customers actually exist without diluting the truly accurate customer locations I already have?* We would like to introduce the concept of "calculated placement". Calculated placement takes into account the known points in determining the unknown points. Let's look first at a uniform placement on a perimeter[2], illustrating a pure uniform placement and a calculated uniform placement.

Pure uniform placement can most easily be understood by presenting an example. Assume we are attempting to locate customers in three contiguous census blocks. Using publicly available data, we know 5 customers exist within the first census block, 4 within the second, and

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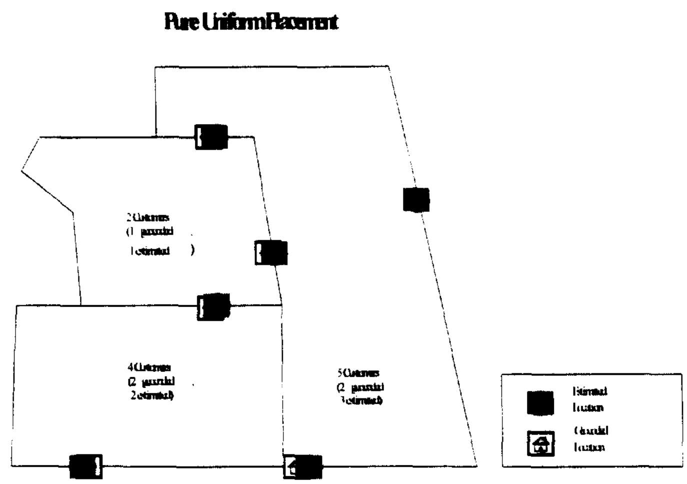
[1] Any reference to customers should include both residence and business customers.
[2] Using the HAI model for illustrative purposes here should not be construed as support for that model.

2 within the third. Now assume we are able to successfully geocode 45 % (5) of the customers, creating the need to estimate the locations of the remaining 55% (6) of the customers which we know to exist. Using the *pure uniform placement* process, we would estimate the remaining locations without regard for the successfully located customers - thereby creating the possibility of uniformly placing estimated location points on top of existing points (see diagram below or <u>Attachment C-1</u>).

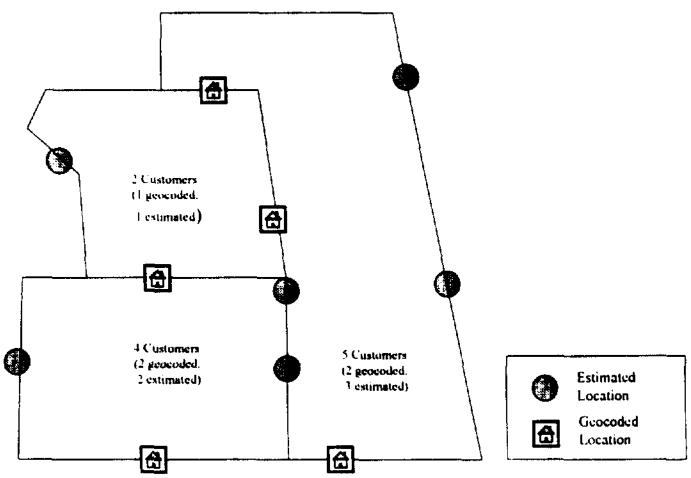


Overlapping the placement of customers may create clusters that do not actually exist. Furthermore, when one considers the vast area that some census blocks cover, the *pure uniform placement* process may greatly understate the cost of supplying universal service.

The logical alternative to the bias created by the *uniform placement* process would be the *calculated uniform placement* process. Using this method, one would supplement the successfully geocoded locations with estimated customer locations that are created <u>acknowledging</u> the existing customer locations.

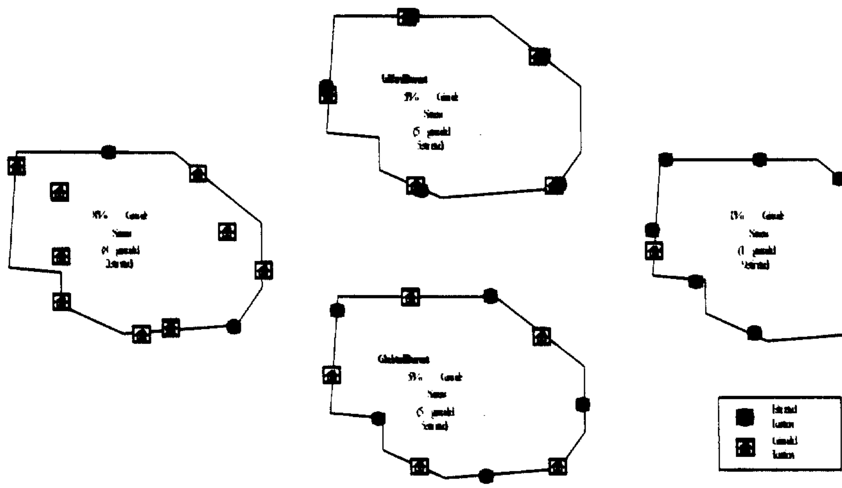
Again assume we are attempting to locate customers in three contiguous census blocks. Using publicly available data, we know 5 customers exist within the first census block, 4 within the second, and 2 within the third. Now assume we are able to successfully geocode 45% (5) of the customers, creating the need to estimate the locations of the remaining 55% (6) of the customers. Using the *calculated uniform placement* process, we identify the successfully geocoded customer location latitudes and longitudes and mark those locations as occupied. The estimated locations are then spaced in an equidistant manner along the remaining perimeter of the census block. Doing so creates unnaturally spaced locations that are not *uniformly* placed at all! This method equally dilutes the impact of successfully geocoded customer locations by incorporating their position into the surrogate location process thereby eliminating any natural clustering or distribution of customers that may truly occur (see diagram below or Attachment C-2).

Calculated Uniform Placement



Thus the combination of geocoded and estimated customer locations creates a bias not present in either process alone. The low success rates of geocoding, particularly in rural areas, allows one to generate data that may appear accurate because it is *based* on successfully geocoded location. However, such locations, when combined with estimated locations, are less representative than estimated location methods alone.

The incorporation of estimated locations in areas already containing extremely high or extremely low geocode success rates, is preferable to doing so in areas containing moderate to low success rates. This is because the chance of creating a skew in customer location by unnaturally spacing or clustering customers is far more likely if one were to combine 50% geocoded locations with 50% estimated locations for example. Consider the diagrams below (see Attachment C-3).



When the successful geocode success rate hits 80% - 85%, the number of estimated locations are so few, that little impact results. However, if a moderate geocode rate is achieved of say, 50%, and the remaining 50% of the customer locations are estimated, the combination of the two placement methods potentially creates one or both of the biases discussed above.

Therefore, we must give special attention to defining the parameters we use to determine when geocoding and estimating customer locations can be used together, and when they cannot. The combination of the two processes can be successfully used when the geocode success rate within a small geographic area (such as a census block, CBG, or wire center) reaches reasonably 85% or higher. This number is obviously not one of precision, but one of reasonable logic. Successfully geocoding the location of 85% of the customers within a wire center generates a set of points that have an impact significant enough to withstand the introduction of the remaining 15% estimated locations without creating clusters or uniform distribution that does not actually exist. In other words, if we know that 85% of the locations are accurate, we can live with a reasonable estimate of the remaining locations. Even if the estimated locations are not truly representative of the actual ones, the bias will not be so great as to significantly change the resulting cost.

Furthermore, by combining customer location methods, an implication of precision is made that may or may not be accurate. If data is presented as being based on geocoded data, the reviewer naturally assumes a high confidence level. That can be quite misleading, however, if the percentage of customers actually geocoded is, in truth, quite low. We should be careful to state the percentage of geocoded locations and the method of surrogate location creation.

Customer Location Data Summary

We understand there may be arguments that any quantity of actual data is better than none. However, we are more concerned about the bias that may be introduced. We would be open to other methods of using geocoded and surrogate points that could address the issue of bias.

Mixing estimated locations with geocoded locations can create clusters with unnatural distributions. Therefore, our recommendation is to use the geocoded locations in the chosen unit of geography (e.g. wire centers, census blocks) where geocode success rates are greater than 85%. In units of geography where geocode success rates are less than 85%, estimated customer locations should be used.

Methods of Grouping Customers

The Commission seeks comment on the relative merits of the HAI Model's clustering algorithm and the Commission staff's clustering algorithm described in the "Test Data" section below.

At this time the BCPM Sponsors are not prepared to offer detailed comments on the specific merits of the HCPM clustering algorithm. Rather, we believe the Commission should focus its attention on the proper use of the results of any clustering algorithm under consideration, and should attempt to avoid the pitfalls of the HAI clustering approach discussed below.

In general, the notion of using standard spatial clustering mechanisms to determine which customer locations should be served as a single carrier serving area (CSA) is perfectly acceptable. The BCPM places customers in microgrids and then *groups* microgrids into CSAs of varying size. As stated in the BCPM Model Methodology (page 28), "Modeling grids that vary in size is tantamount to allowing clusters of customers associated with a particular CSA to vary in density and dispersion." Some parties have raised objections to the BCPM approach, complaining that it arbitrarily separates customers who might otherwise be served together. It is important to note that *this is a characteristic of any clustering methodology*, particularly that used by the HAI Model which can be accurately characterized as an agglomerative technique. The results of HAI's agglomerative approach are highly dependent on the *starting point* from which the rastarized cells are aggregated. If the starting point is changed, the criteria that constrain cluster size and shape will result in a different set of clusters being produced. Customers that would be "served together" under one starting point are "broken apart" under another starting point. Hence, the "cookie cutter" descriptor that the HAI Sponsors have chosen to describe the BCPM, ironically, much more accurately applies to the HAI Model itself!

If this Commission decides the concept of clustering is a reasonable means of determining CSAs, it is important to avoid the subjectivity built into the HAI approach. If an agglomerative approach is used, it is necessary to examine the clusters produced by all starting points and establish reasonable criteria for choosing one final set over another.

Most importantly, it is essential that the locations of the points within clusters be maintained, not discarded, as the clusters are used as serving areas in any proxy model. These parameters include relative *distance* between and *dispersion* among points. The BCPM maintains customer dispersion by dividing CSAs (grids) into quadrants when placing customers. The HAI Model discards existing dispersion information and uniformly distributes within clusters. This is a significant point that cannot be overstated. Any clustering algorithm is designed to reveal groupings based on relative locations. To subsequently ignore the relative locations that create the clusters in the first place is pure folly, and guarantees incorrect results.

Design of Distribution and Feeder Plant

Comparison of Proxy Model Feeder Approaches

The feeder portion of the proxy models have evolved over time. Early on, a simplistic north-south-east-west (NSEW) routing of the main feeder was built with separate subfeeders directed to every census block group (CBG). In subsequent releases, improvements to the feeder algorithms have been made. These improvements ranged from routing the main feeder at an angle to sharing of the sub-feeder. The HCPM implements a further proposed improvement by utilizing minimum spanning trees.

We will try to provide a comparative analysis of the current approaches.

HAI 5.0a Feeder Design

HAI uses two distinct methods to lay out feeder plant. In the first method, feeder emanates from the central office in four cardinal compass point directions. Subfeeder extends from the feeder at right angles to serve the main clusters. This is the default feeder design and is essentially the same as that used in earlier versions of the model. The second option, which the user can select, allows the user to indicate whether the feeder should be pointed ("steered") towards the preponderance of main clusters within the wire center quadrant that the feeder is serving. The model applies a route-to-air multiplier to adjust the feeder distance if this option is chosen. This multiplier is a user-adjustable input.

BCPM 3.1 Feeder Design

BCPM also uses two distinct methods in determining feeder layout. These methods are in the preprocessing module and result in the optimal method being chosen for each central office.

The preprocessing module shows the feeder emanating from each central office in four cardinal compass point directions for 10,000'. After 10,000', feeder is either "pointed" toward the population centroid of the wire center quadrant or is "split" and pointed toward the population centroid of 1/2 of the wire center quadrant. The rationale is that for the first 10,000', feeder routes likely follow roads which are typically oriented north, south, east, and west while in town. Out of town, roads are more likely to diverge from this orientation and feeder routes can be more directly targeted toward population centers.

Subfeeder then extends either vertically or horizontally from the feeder to serve BCPM's serving areas (ultimate grids). Subfeeder is shared, where appropriate, between serving areas.

The BCPM preprocessing logic tests whether a pointed (split) feeder yields a shorter total feeder distance (including subfeeder) than cardinal routing. If not, cardinal routing is used.

HCPM Feeder Design

HCPM has similarities to both the HAI and BCPM. The HCPM has 4 main feeder routes emanating from the central office in the four cardinal compass point directions. From this main feeder, junction points are marked. The HCPM then goes through each FDI point to determine where to route. The determination takes into account the cost of structure and the cost of material for the route under consideration. The routes analyzed are those of the junction point on the main feeder and the previously analyzed and routed FDIs in proximity. Using this minimum spanning tree approach that minimizes total cost, a modified "pine-tree" approach is constructed to connect all the FDI points. The user has the option of having the minimum spanning tree formed rectilinearly or using airline distances. Under either case, a single road adjustment factor is applied to convert the ideal routing length into reality.

How Can We Test The Various Approaches?

As has been demonstrated in FCC ex-parte filings as well as internal FCC analysis, the minimum spanning tree has proven to be a valid and valuable measurement of the reality of a model's feeder routing. In fact, a model should estimate a feeder and subfeeder distance that exceeds the MST distance. We have been able to run the MST analysis for the BCPM and the HAI in a number of states. However, we have not had time or the data to test the HCPM.

HAI Analysis

Using the wire centers for a single state, our analysis examined the relationship between the feeder and subfeeder lengths estimated by HAI 5.0a and the MST distance for each of the model's wire centers, *by wire center quadrant*. That is, a MST distance was estimated for the main clusters that fell within, for example, the north quadrant of a wire center where the MST connected the serving areas with each other and the central office. The calculated MST was then compared with the estimated total feeder and subfeeder distance for the quadrant. The results of the analysis are shown in Table 1.

Table 1. Ratio of Feeder & Subfeeder Distance to MST Distance by HAI 5.0a Wire Center Quadrant

	Default	Steerin g
Maximum	4.56	2.25
Minimum	0.98	0.77
Average	1.47	1.28
Line Weighted Average	1.65	1.33
Coefficient of Variation	25.4 %	15.7 %
Percent of Quadrants for Which Ratio < 1	0.39%	6.0%

An estimated feeder and subfeeder distance to MST ratio of less than 1 characterized 0.39% of the quadrants. And then, only slightly less than 1. Hence, the HAI 5.0a feeder design passes, for the most part, the MST reality check. There are, however, some relatively high ratios with the maximum being 4.6.

Using the HAI default route-to-air ratio of 1.27 and enabling the steering option results in the statistics shown in the last column of Table 1. Although the maximum estimated distance to MST distance ratio is reduced by half, substantially more quadrants do not pass the MST reality test, i.e., 6% versus 0.39%. This suggests that the user should use this option with care and have a good idea what a reasonable, forward-looking route-to-air ratio is for feeder.

This raises an important question. Does the HAI 5.0a perform a check to determine which of the two methods is more efficient? Based on our analysis, we have determined that the default and steering designs are not compared with each other to determine which one yields the more efficient feeder routing. Rather, the user must select a method beforehand for the entire modeled area (company within a state). This does not allow the HAI model to optimize the feeder route for an individual wire center but forces all wire centers in a company to construct feeder in the same way. The BCPM approach is clearly superior in that it optimizes feeder routing for each individual wire center.

BCPM Analysis

The same methodology used in the analysis of HAI 5.0a feeder distance estimation was used to analyze BCPM's feeder distance estimation. The results of this analysis for the same wire centers are shown in Table 2.

Table 2. Ratio of Feeder & Subfeeder Distance to MST Distance by BCPM Wire Center Quadrant

Maximum	2.25
Minimum	0.90
Average	1.28
Line Weighted Average	1.33
Coefficient of Variation	13.7 %
Number of Quadrants for Which Ratio < 1	1%

An estimated feeder and subfeeder distance to MST ratio of less than 1 characterized 1% of the quadrants. Although the lowest ratio is 0.9, 62.5% of the quadrants with ratios less than 1 have ratios between 0.96 and 1.0. Although BCPM and HAI are relatively equivalent on this MST reality check, it is important to note that the coefficient of variation in the ratio (a measure of dispersion around the average ratio) is much smaller for BCPM than for HAI (default). This indicates that the BCPM results are more consistent than the HAI.

Design of Distribution and Feeder Conclusions and Recommendations

Are either the BCPM or HAI approaches inefficient? We would have expected both models to exceed the minimum spanning tree. As the name indicates, the MST is the minimum distance necessary to connect points. It does not take into consideration rights-of-way, terrain, obstacles, or cost minimization. In fact, if we were to use the rule of thumb that the air to route conversion factor should be close to 1.4, each model seems to be in line with expectations. As tables 1 and 2 indicate, the BCPM 3.1 and HAI 5.0a are similar, on average, in terms of the amount of estimated feeder and subfeeder distance relative to their MST distances. The simple average ratio is 1.3 for BCPM and 1.5 for HAI 5.0a.

What about the HCPM approach? The HCPM proposes a Cost Minimized Spanning Tree (rectilinear and airline) that is then adjusted to account for road routing. Our major concerns with this approach are 1) we have not been able to analyze and compare the routing with the other models on record, and 2) a single road to route adjustment will overcompensate in rural areas and under compensate in urban areas. In theory, we would agree that the minimum spanning road tree (based upon minimization of costs) would produce the most accurate assessment of the possible distance needed to connect points along a right-of way. However, this approach is not in the proceeding. If nothing else, the theoretical approach needs to be modified to account for the differences in the road to route adjustment that can occur in denser and sparser areas.

Reaction to the Current Synthesized Version of the HCPM (version 2.6)

Our critique here is in addition to the Joint Sponsor-provided critique of the actual logic and coding of the modules within the HCPM provided in Sprint's July 31, 1998 Ex Parte filing to Ms. Magalie Roman Salas from Mr. Pete Sywenki (see Attachment B). A review of the FEEDDIST program has already been provided. The review of the CLUSTINTF and VB clustering are near completion.

This critique focuses on the structure and use of the HCPM as a proxy system. In this review, we looked at structure, ease of use, the ability to be maintained, and reliability.

Overall, we believe the HCPM has definite potential. As mentioned earlier in the comments, the HCPM needs intense testing with actual customer location data. In addition, there are logic errors, structure changes, data definitions, data sources, and auditing needs that must be addressed before we can fully endorse HCPM as acceptable for the national universal service model.

Critical Items absent from the current HCPM

1. User interface:
   - flexible program control
   - option to run one or more states
   - option to run one or more companies
   - easy, somewhat error-proof, way for users to edit inputs (e.g. don't have to worry about sort order, etc.)
   - various levels and types of reports
   - ability to have multiple views or scenarios.

2. System layout:
   - directory structure should be developed separating input files from program and other control files.
   - input files should be separated by state

3. System design and methodology
   - code should be written consistently across the three modules, using the same coding standards, naming conventions
   - code should be written in the same programming language to increase interoperability, reduce maintenance costs, make documentation easier, and make audits easier
   - more current programming techniques should be used when possible (e.g. objects)

4. System review/maintenance:
   - there needs to be a way to audit the system and see intermediate results
   - there needs to be a way to balance geocoded data to the actual line counts, by wire center
   - the model needs to be easy for someone to edit the system to create different output files (changing either the data or the format)
   - the reporting module needs to be flexible
   - there needs to be a consistent set of actual customer data, without which, the HCPM, HAI and BCPM alternative approaches cannot be thoroughly compared and analyzed

General comments on HCPM

1. The system lacks structure. All files and programs are located in the same subdirectory, making it difficult to keep track of individual files. There should be a directory structure in place to separate input files and output files by state. The majority of the file handling has to be done manually. Program files and other control files should be located in a separate directory.

2. The system is a conglomeration of various programming languages. This generally results in systems that are very hard to maintain and more subject to error.

3. There is little or no flexibility in controlling the program flow. In HCPM 2.6 a batch file handles system control. In the latest release of the model, the interface assumes that the buttons are pressed sequentially, thus mimicking the original batch file. This is not the most current, more efficient style of programming.

4. The system as it is written cannot be easily audited. As it currently stands, the system is a "black box" with no way to check intermediate results. At the present time, to look at any of the calculations one must have a programming background.

5. There are concerns about model methodology. We have pointed these out in the attached July 31 Ex Parte filing. The Sponsors will submit a critique of the clustering approach in the near future.

6. The system is exceptionally slow. The run times are a function of the large amounts of data to process, but also are a function of the programming style. Data structures are poorly chosen, resulting in excessive looping during processing.

Conclusion

The Joint Sponsors are not at all opposed to the concept of synthesizing a cost proxy model platform utilizing different elements from various models. A synthesis may produce a product better than any of its predecessors. However, the Joint Sponsors do have some concerns about the process. As it concerns geocoding, the Joint Sponsors believe good geocoded data would be beneficial to any proxy model, but the Joint Sponsors have questioned the quality of the currently available geocoded data. As important to the nature of the available data, the Joint Sponsors are even more concerned about accurately locating those customers that are not geocoded. To this end, the Joint Sponsors propose using a "calculated placement" approach as described herein. The Joint Sponsors recommend a geocoding breakpoint (80-85%) below which geocoded data is not used and customer locations are estimated as discussed. Also, it is essential that the location of the points within clusters be maintained, not discarded, as the clusters are used as serving areas in any proxy model. The selected model should optimize the feeder route on an individual wire center basis similar to the BCPM. Even though the HCPM has definite potential, it needs intense testing with actual customer location data. In addition, there are logic errors, structure changes, data definitions, data sources, and auditing needs that must be addressed before the HCPM is acceptable for the national universal service model per the FCC's own criteria.

ATTACHMENT B DOCKET FILE COPY DUPLICATE

Sprint

Pete Sywenki
Director, Federal Regulatory Relations

Law & External Affairs
1850 M Street, NW, Suite 1100
Washington, DC 20036
Voice 202 828 7452
Fax 202 296 3469
pete.n.sywenki@mail.sprint.com

EX PARTE OR LATE FILED

EX PARTE

July 31, 1998

Ms. Magalie Roman Salas
Secretary - Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, D.C. 20554

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JUL 31 1998
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

RE: CC Docket Nos. 96-45 and 97-160

Dear Ms. Salas,

Today, a meeting was held between the sponsors of the BCPM and the developers of HCPM for the FCC with regard to the above referenced dockets. Representing the BCPM sponsors were Jim Stegeman and Mike Krell of INDETEC, Whit Jordan of BellSouth, Peter Copeland and Rick Marksbury of US WEST, and Brian Staihr and Pete Sywenki of Sprint. In attendance for the FCC were Bill Sharkey, Mark Kennet, and Jeff Prisbrey.

The purpose of the meeting was to provide a review of the HCPM's general approach, inputs, code, and engineering. The attached materials were presented by the BCPM sponsors in the meeting.

The original and three copies of this notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206(b)(1) of the Commission's rules. If there are any questions, please call.

Sincerely,

Peter N. Sywenki

Pete Sywenki

Atachments

Review of HCPM

Presented by: BCPM Sponsors

Overview

- General Approach
- Inputs
- Loop Code
- Loop Engineering
- Validation
- Proxy Modeling
- What is Next

Review of General Approach

- Basic loop approach appears plausible
- Distribution approach that recognizes and builds only to populated grids in a cluster
  - Appears to be an improvement in how it builds the distribution plant to where the customers are
  - Avoids arbitrary rotation, squaring, lots, and network build
- Feeder based Minimum Spanning Tree (cost minimized) appears OK
- However, there are some shortcomings in implementation and scope of model

Review of Inputs

- CLLI Boundaries
  - Concerned with use of On-Target as source of locations and Boundaries
    - Both BCPM and HAI had selected BLR as the better vendor
- Clusters
  - Concerned with continued use of 18kft clusters
- User Inputs are not as detailed as HAI or BCPM
  - HAI and BCPM input structure based in part on FCC FNPRM of July 17, 1997